

What is claimed is:

1. An isolated nucleic acid which encodes a Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or a fragment thereof.
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2. The isolated nucleic acid of claim 1, wherein the polypeptide comprises consecutive amino acids having the amino acid sequence set forth in SEQ ID NO: 2.
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3. The isolated nucleic acid of claim 1, wherein the isolated nucleic acid is designated ORFK10.5 and comprises consecutive nucleotides having the sequence set forth in SEQ ID NO: 1.
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4. The isolated nucleic acid of claim 1, wherein the isolated nucleic acid is DNA.
5. The isolated nucleic acid of claim 1, wherein the isolated nucleic acid is RNA.
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6. The isolated nucleic acid of claim 5, wherein the RNA is mRNA.
- 25 7. The isolated nucleic acid of claim 4, wherein the DNA is synthetic DNA.
8. The isolated nucleic acid of claim 4, wherein the DNA is genomic DNA.
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9. The isolated nucleic acid of claim 4, wherein the DNA is cDNA.
10. The isolated nucleic acid of claim 1, wherein the

nucleic acid is detectable.

11. The isolated nucleic acid of claim 10, wherein the nucleic acid is labeled with a detectable marker.
12. The isolated nucleic acid of claim 11, wherein the detectable marker is a radioactive label, or a calorimetric, a luminescent, or a fluorescent marker.
13. A replicable vector which comprises the isolated nucleic acid of claim 1.
14. The vector of claim 13, wherein the vector is a plasmid.
15. The vector of claim 13, wherein the vector is a cosmid.
16. The vector of claim 13, wherein the vector is a λ phage.
17. The vector of claim 13, wherein the vector is a YAC.
18. A host vector system which comprises the vector of claim 13 and a suitable host cell.
19. The host vector system of claim 18, wherein the host cell is a eukaryotic cell.
20. The eukaryotic cell of claim 19, wherein the eukaryotic cell is a hematopoietic cell.
21. The eukaryotic cell of claim 20, wherein the hematopoietic cell is a B cell.
22. The host cell of claim 18, wherein the host cell is a

bacterial cell.

23. The host cell of claim 22, wherein the bacterial cell is E.Coli.

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24. A method of producing a polypeptide which comprises growing the host vector system of claim 18 under suitable conditions permitting production of the polypeptide and recovering the polypeptide so produced.

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25. An isolated nucleic acid comprising nucleotides having the sequence of a promoter of latency-associated nuclear antigen 2 transcription.

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26. The isolated nucleic acid of claim 25, wherein the nucleic acid comprises consecutive nucleotides having the sequence set forth in SEQ ID NO: 3.

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27. A replicable vector which comprises the nucleic acid of claim 25 operably linked to a second nucleic acid which encodes a gene of interest.

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28. The vector of claim 27, wherein the vector is a plasmid.

29. The vector of claim 27, wherein the vector is a cosmid.

30. The vector of claim 27, wherein the vector is a λ phage.

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31. The vector of claim 27, wherein the vector is a YAC.

32. A host vector system which comprises the vector of claim 27 and a suitable host cell.

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33. The host vector system of claim 32, wherein the host cell is a eukaryotic cell.
- 5 34. The eukaryotic cell of claim 33, wherein the eukaryotic cell is a hematopoietic cell.
35. The eukaryotic cell of claim 34, wherein the hematopoietic cell is a B cell.
- 10 36. The host vector system of claim 32, wherein the host cell is a bacterial cell.
37. The host vector system of claim 32, wherein the bacterial cell is E.Coli.
- 15 38. A method of producing a polypeptide which comprises growing the host vector system of claim 32 under suitable conditions permitting production of the polypeptide and recovering the polypeptide so produced.
- 20 39. An isolated nucleic acid capable of specifically hybridizing to the isolated nucleic acid of claim 1.
- 25 40. The nucleic acid of claim 39, wherein the nucleic acid is DNA.
41. The nucleic acid of claim 39, wherein the nucleic acid is RNA.
- 30 42. A nucleic acid capable of specifically hybridizing to the isolated nucleic acid of claim 25.
43. The nucleic acid of claim 42, wherein the nucleic acid is DNA.

44. The nucleic acid of claim 42, wherein the nucleic acid is RNA.
- 5 45. An isolated polypeptide or fragment thereof encoded by the nucleic acid of claim 1.
46. The polypeptide of claim 45, wherein the nucleic acid comprises consecutive nucleotides having the sequence set forth in SEQ ID NO: 1.
- 10 47. An isolated polypeptide comprising consecutive amino acids having the amino acid sequence set forth in SEQ ID NO:2.
- 15 48. An antibody capable of specifically binding to the polypeptide of claim 45.
49. The antibody of claim 48, wherein the antibody is a monoclonal antibody.
- 20 50. The antibody of claim 48, wherein the antibody is a polyclonal antibody.
51. The antibody of claim 48, wherein the antibody is humanized.
- 25 52. The antibody of claim 48, wherein the antibody is detectable.
- 30 53. The antibody of claim 52, wherein the detectable antibody is labeled with a detectable marker.
54. The labeled antibody of claim 53, wherein the detectable marker is a radioactive label or a calorimetric, or a luminescent, or a fluorescent
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marker.

55. A composition comprising the antibody of claim 48 and an agent conjugated to the antibody.
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56. The composition of claim 55 wherein the agent is a radioactive isotope or toxin.
57. A method of determining whether a subject is afflicted with a disease associated with Kaposi's sarcoma-associated herpesvirus infection of a B cell which comprises:
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- (a) obtaining a suitable sample from the subject;
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- (b) contacting the suitable sample with the detectable antibody of claim 52 so as to form a complex between the antibody and any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof present
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- in the sample;
- (c) removing any unbound antibody; and
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- (d) detecting any antibody which is bound to any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 in the sample, wherein the presence of antibody indicates that the subject is afflicted with the disease.
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58. The method of claim 57, wherein the disease is Castleman's disease.
59. The method of claim 57, wherein the disease is Primary
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- Effusion Lymphoma.

5 60. A method of determining whether a subject is afflicted
 with a disease associated with Kaposi's sarcoma-
 associated herpesvirus infection of a B cell which
 comprises:

- (a) obtaining a suitable sample from the subject;
- 10 (b) immobilizing a capturing antibody wherein the
 capturing antibody is capable of binding to
 Kaposi's sarcoma-associated herpesvirus latency-
 associated nuclear antigen 2 polypeptide or
 fragment thereof to a support;
- 15 (c) removing any unbound capturing antibody;
- (d) contacting the capturing antibody with the
 suitable sample so as to form a complex between
 the antibody and any Kaposi's sarcoma-associated
20 herpesvirus latency-associated nuclear antigen 2
 polypeptide or fragment thereof present in the
 sample;
- (e) removing any unbound sample;
- 25 (f) contacting the complex obtained in step (d) with
 the detectable antibody of claim 52 so as to form
 a complex between the detectable antibody and the
 complex;
- 30 (g) removing any unbound detectable antibody; and
- (h) detecting any detectable antibody which is bound
 to the complex wherein the presence of
35 detectable antibody indicates that the subject is

afflicted with the disease.

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61. The method of claim 57, wherein the disease is Castleman's disease.
62. The method of claim 57, wherein the disease is Primary Effusion Lymphoma.
- 10 63. A method of determining whether a subject is infected with Kaposi's sarcoma-associated herpesvirus which comprises:
- (a) obtaining a suitable sample from the subject;
- 15 (b) contacting the suitable sample with the detectable antibody of claim 52 so as to form a complex between the antibody and any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof present
- 20 in the sample;
- (c) removing any unbound antibody; and
- 25 (d) detecting any antibody which is bound to any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof in the sample, wherein the presence of antibody indicates that the subject is infected with Kaposi's sarcoma-associated
- 30 herpesvirus.
64. A method of determining whether a subject is infected with Kaposi's sarcoma-associated herpesvirus which comprises:

- (a) obtaining a suitable sample from the subject;
 - (b) immobilizing a capturing antibody wherein the capturing antibody is capable of binding to Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof to a support;
 - (c) removing any unbound capturing antibody;
 - (d) contacting the capturing antibody with the suitable sample so as to form a complex between the antibody and any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof present in the sample;
 - (e) removing any unbound sample;
 - (f) contacting the complex obtained in step (d) with the detectable antibody of claim 52 so as to form a complex between the detectable antibody and the complex;
 - (g) removing any unbound detectable antibody; and
 - (h) detecting any detectable antibody which is bound to the complex wherein the presence of detectable antibody indicates that the subject is infected with Kaposi's sarcoma-associated herpesvirus.
65. The method of any one of claims 57, 60, 63, and 64, wherein the suitable sample is tonsil tissue, lymph nodes, spleen, skin lesions, blood, serum, plasma,

cerebrospinal fluid, lymphocytes, urine, transudates, exudates, bone marrow cells, or supernatant from a cell culture.

- 5 66. The method of claim 65, wherein the antigen bound by the antibody is detected by an immunoassay.
67. The method of claim 66, wherein the immunoassay is ELISA.
- 10 68. The method of claim 66, wherein the immunoassay is IFA.
69. The method of claim 66, wherein the immunoassay is Western blotting.
- 15 70. A kit for diagnosing Kaposi's sarcoma-associated herpesvirus infection comprising the labeled antibody of claim 52.
- 20 71. The kit of claim 70, further comprising a means for determining the level of Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof bound by an antibody.
- 25 72. The kit of claim 71, wherein the antibody is bound to a support.
73. A method of inhibiting p53 mediated apoptosis of a cell which comprises introducing into the cell an effective amount of the replicable vector of claim 13, so as to thereby inhibit p53 mediated apoptosis of the cell.
- 30 74. A method of immortalizing a cell which comprises introducing into the cell an amount of the replicable vector of claim 13 effective to inhibit p53 mediated
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apoptosis of the cell, so as to thereby immortalize the cell.

- 5 75. A method of producing an antibody which comprises introducing into a cell which produces the antibody an amount of the replicable vector of claim 13 effective to inhibit p53 mediated apoptosis of the cell and thereby immortalizing the cell, so as to thereby produce the antibody.
- 10 76. The method of any one of claims 73-75, wherein the cell is a hematopoietic tissue cell or a B cell.
- 15 77. An isolated antibody produced by the method of claim 75.
- 20 78. A method of determining whether a subject is infected with Kaposi's sarcoma-associated herpesvirus which comprises:
- (a) obtaining a suitable sample from the subject;
- 25 (b) contacting the suitable sample with the detectable nucleic acid of claim 39 under hybridizing conditions so as to form a complex between the detectable nucleic acid and any nucleic acid which encodes a Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof which
- 30 is present in the sample;
- (c) removing any unbound detectable nucleic acid; and
- 35 (d) detecting any detectable nucleic acid which is bound to the complex, wherein the presence of

detectable nucleic acid indicates that the subject is infected with Kaposi's sarcoma-associated herpesvirus.

- 5 79. The method of claim 78, wherein the suitable sample is tonsil tissue, lymph nodes, spleen, skin lesions, blood, serum, plasma, cerebrospinal fluid, lymphocytes, urine, transudates, exudates, bone marrow cells, or supernatant from a cell culture.
- 10 80. The method of any one of claim 57, 60, 63, 64, and 78, wherein the subject is mouse, rat, dog, guinea pig, ferret, rabbit, primate, or human being.
- 15 81. A kit for diagnosing Kaposi's sarcoma-associated herpesvirus infection comprising a labeled nucleic acid of claim 39.
- 20 82. The kit of claim 81, further comprising a means for determining the level of sample bound to the labeled nucleic acid.
- 25 83. The kit of claim 82, wherein the labeled nucleic acid is bound to a support.
- 30 84. A transgenic non-human animal which has stably integrated into the genome of its germ cells or somatic cells an exogenous nucleic acid construct wherein the nucleic acid construct comprises a B-cell specific promoter of latency-associated nuclear antigen 2 operably linked to a second nucleic acid which encodes a gene of interest and is introduced into the transgenic non-human animal, or an ancestor, at an embryonic stage.

85. The transgenic non-human animal of claim 84, wherein the animal is a mammal.
- 5 86. The transgenic non-human animal of claim 84, wherein the non-human animal is a mouse, a rat, a sheep, a dog, a primate, or a reptile.
- 10 87. A method for evaluating in a non-human transgenic animal the potential therapeutic effect of an agent for treating Kaposi's sarcoma-associated herpesvirus infection in a human, which comprises:
- 15 (a) providing an agent to a transgenic non-human animal whose cells comprise the nucleic acid of claim 1;
- 20 (b) determining the therapeutic effect of the agent on the transgenic non-human animal by monitoring Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 expression, wherein a decrease in Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 indicates that the agent would have a potential
- 25 therapeutic effect on Kaposi's sarcoma-associated herpesvirus infection in a human.
88. The method of claim 87, wherein the animal is a mammal.
- 30 89. The method of claim 87, wherein the non-human animal is a mouse, a rat, a sheep, a dog, a primate, or a reptile.
90. A method of treating Kaposi's sarcoma-associated

herpesvirus infection in a subject, which comprises introducing into the subject's cells an amount of the nucleic acid of claim 39 effective to hybridize to any isolated nucleic acid which encodes Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof which is present in the subject's cells, so as to thereby treat Kaposi's sarcoma-associated herpesvirus infection.

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- 10 91. A method of treating Kaposi's sarcoma-associated herpesvirus infection in a subject, which comprises introducing into the subject's cells an amount of the nucleic acid of claim 42 effective to hybridize to any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 promoter which is present in the subject's cells, so as to thereby treat Kaposi's sarcoma-associated herpesvirus infection.
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- 20 92. A composition comprising the antibody of claim 48 and a carrier.
- 25 93. A method of treating a subject infected with Kaposi's sarcoma-associated herpesvirus, which comprises administering to the subject an amount of the composition of claim 92 under conditions such that the antibody binds to any Kaposi's sarcoma-associated herpesvirus latency-associated nuclear antigen 2 polypeptide or fragment thereof present in the subject, so as to thereby treat the subject.
- 30 94. A composition comprising the polypeptide of claim 45 and a carrier.